

(19) 대한민국특허청(KR)

(12) 등록특허공보(B1)

(51) Int. Cl.

C08G 65 /48

C08G 65 /34

(11) 등록번호

10-0226442

(24) 등록일자

1999년07월27일

(21) 출원번호

10-1997-0054781

(65) 공개번호

1999-0033424

(22) 출원일자

1997년10월24일

(43) 공개일자

1999년05월15일

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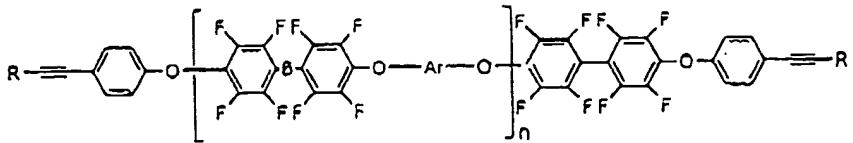
심사관 : 김홍균

(54) 열 경화성 에티닐기를 갖는 불소 치환 폴리아릴렌 에테르, 그의제조방법 및 그를 이용한 광소자

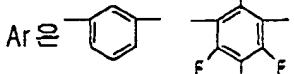
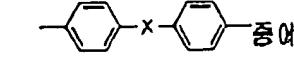
(57) 청구의 범위

청구항 1. 하기 화학식 (1)로 표시되는 에티닐기를 갖는 불소 치환 폴리아릴렌에테르:

(화학식 1)



식 중, B는 없거나, $\overset{\text{O}}{\underset{\text{C}}{\text{C}}}$ 또는 SO_2 이고 R은 H 혹은 페닐기,

Ar은   중에서 선택된 1개의 방향족기,

X는 $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2-$, $-\text{O}-$, 또는 $-\text{S}-$ 이고,

n은 종합도로서 1 ~ 100의 자연수임.

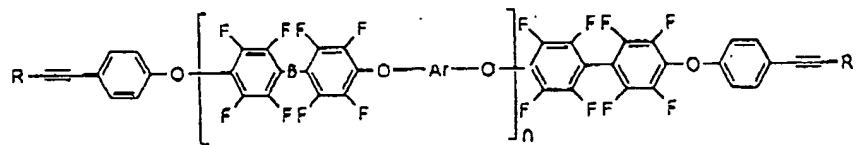
청구항 2. 제 1 항에 있어서,

불소 치환 폴리아릴렌 에테르 10-페닐에티닐 폐놀(FPAE10-PEP), 불소 치환 폴리아릴렌 에테르20-페닐에티닐 폐놀(FPAE20-PEP), 또는 불소 치환 폴리아릴렌 에테르40-페닐에티닐 폐놀(FPAE40-PEP)인, 에티닐기를 갖는 불소 치환 폴리아릴렌에테르.

청구항 3. 데카플루오로바이페닐 화합물과 방향족 디올 유도체를 열축종합시켜 말단에 플루오로페닐기가 위치한 폴리아릴렌 에테르를 제조하는 단계와, 상기한 폴리머에 에티닐 폐놀 유도체를 고분자 말단에 치환하는 단계를 포함하는 하기 화학식 (1)로 표시되는 에티닐기를 갖는 불소 치환 폴리아릴렌에테르의 제조방법:

(화학식 1)

(화학식 1)



식 중, B는 없거나, O^{\bullet} 또는 SO_2 이고 R은 H 혹은 폐닐기,

Ar은 중에서 선택된 1개의 방향족기,

X는 $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2-$, $-\text{O}-$, 또는 $-\text{S}-$ 이고,

n은 종합도로서 1 ~ 100의 자연수임.

(19) THE KOREAN INDUSTRIAL PROPERTY OFFICE
(12) REGISTERED PATENT OFFICIAL GAZETTE (B1)

(11) REGISTRATION No. 10-0226422
(24) REGISTRATION DATE JULY 27, 1999
(21) APPLICATION No. 10-1997-0054781
(22) APPLICATION DATE OCTOBER 24, 1997
(65) PUBLICATION No. P1999-0033424
(43) PUBLICATION DATE MAY 15, 1999
(73) PATENTEE KOREA TELECOM
PRESIDENT : LEE GE CHEOL

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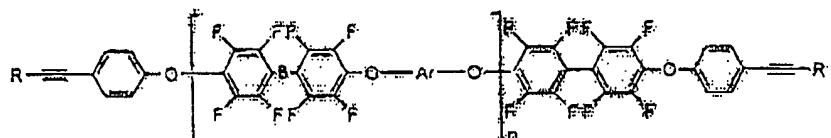
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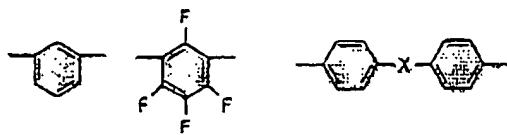
(54) FLUORINE SUBSTITUTED POLYARYLENE ETHER HAVING THEMOSETTING ETHINYL RADICAL, METHOD FABRICATING THE SAME AND OPTICAL DEVICE USING THE SAME

(57) CLAIMS

1. Fluorine substituted polyarylene ether having ethinyl radical, as represented by the following formula (1):



where B is nonexistent, - or SO₂ and R is H or phenyl radical,
Ar is one aromatic radical selected

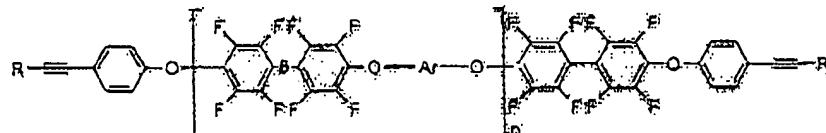


X is $-C(CF_3)_2$, $-CO-$, $-SO_2-$, $-O-$ or $-S-$,

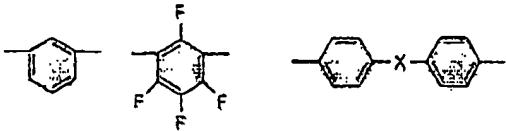
n is natural number ranging from 1~100 as polymerization degree.

2. The fluorine substituted polyarylene ether having ethynyl radical according to claim 1, wherein the fluorine substituted polyarylene ether is fluorine substituted polyarylene ether 10-phenylethylnyl phenol(FPAE10), fluorine substituted polyarylene ether 20-phenylethylnyl phenol(FPAE20), or fluorine substituted polyarylene ether 40-phenylethylnyl phenol(FPAE40).

3. A methoe for fabricating fluorine substituted polyarylene ether having ethynyl radical, as represented by the following formula (1), which comprises steps of thermal polycondensing decafluorobiphenyl compound and aromatic group diol- derivatives to form polyarylene ether in which fluorophenyl radical is disposed at an end thereof, and substituting polymer for ethynyl phenol derivatives at a high molecular end.



where B is nonexistent, C_6H_4 or SO_2 and R is H or phenyl radical,
Ar is one aromatic radical selected from

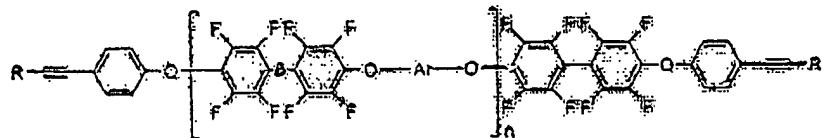


X is $-C(CF_3)_2$, $-CO-$, $-SO_2-$, $-O-$ or $-S-$,

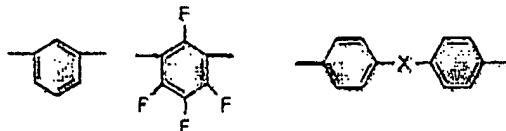
n is natural number ranging from 1~100 as polymerization degree.

4. A methoe for fabricating fluorine substituted polyarylene ether having ethynyl radical, as represented by the following formula (1), which comprises steps of thermal polycondensing decafluorobenzophenone compound and aromatic group diol- derivatives to form polyarylene ether in which fluorophenyl radical is disposed

at an end thereof, and substituting polymer for ethynyl phenol derivatives at a high molecular end.



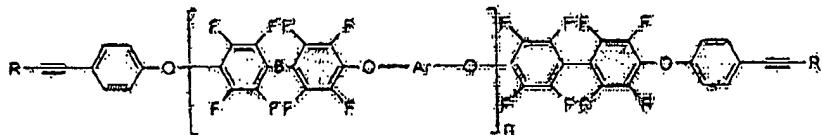
where B is nonexistent, C_6H_4 or SO_2 and R is H or phenyl radical,
Ar is one aromatic radical selected from



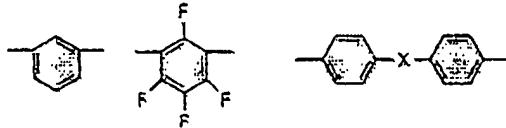
X is $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2-$, $-\text{O}-$ or $-\text{S}-$,

n is natural number ranging from 1~100 as polymerization degree.

5. An optical waveguide device comprising a lower cladding layer formed on a silicon substrate, a core layer formed on the lower cladding layer, and an upper cladding layer formed on the core layer, wherein the core layer is made from fluorine substituted polyarylene ether having ethynyl radical, as represented by the following formula (1):



where B is nonexistent, C_6H_4 or SO_2 and R is H or phenyl radical,
Ar is one aromatic radical selected from



X is $-\text{C}(\text{CF}_3)_2$, $-\text{CO}-$, $-\text{SO}_2-$, $-\text{O}-$ or $-\text{S}-$,

n is natural number ranging from 1~100 as polymerization degree.